Gac Sanit. 2014;28(3):215–221

Original

Real waiting times for surgery. Proposal for an improved system for their management

Ignacio Abásolo[a,*], Patricia Barber[b], Beatriz González López-Valcárcel[b], Octavio Jiménez[c]

[a] Departamento de Economía de las Instituciones, Estadística Económica y Econometría, Universidad de La Laguna, Canarias, España
[b] Departamento de Métodos Cuantitativos en Economía y Gestión, Universidad de Las Palmas de Gran Canaria, Canarias, España
[c] Hospital Universitario de Gran Canaria Doctor Negrín, Las Palmas de Gran Canaria, Canarias, España

ARTICLE INFO

Article history:
Received 3 August 2013
Accepted 25 October 2013
Available online 10 January 2014

Keywords:
Health care sector
Waiting lists
Time management
Elective surgical procedure
Cholecystectomy
Carpal tunnel syndrome
Inguinal hernia

ABSTRACT

Objectives: In Spain, official information on waiting times for surgery is based on the interval between the indication for surgery and its performance. We aimed to estimate total waiting times for surgical procedures, including outpatient visits and diagnostic tests prior to surgery. In addition, we propose an alternative system to manage total waiting times that reduces variability and maximum waiting times without increasing the use of health care resources. This system is illustrated by three surgical procedures: cholecystectomy, carpal tunnel release and inguinal/femoral hernia repair.
Methods: Using data from two Autonomous Communities, we adjusted, through simulation, a theoretical distribution of the total waiting time assuming independence of the waiting times of each stage of the clinical procedure. We show an alternative system in which the waiting time for the second consultation is established according to the time previously waited for the first consultation.
Results: Average total waiting times for cholecystectomy, carpal tunnel release and inguinal/femoral hernia repair were 331, 355 and 137 days, respectively (official data are 83, 68 and 73 days, respectively). Using different negative correlations between waiting times for subsequent consultations would reduce maximum waiting times by between 2% and 15% and substantially reduce heterogeneity among patients, without generating higher resource use.
Conclusion: Total waiting times are between two and five times higher than those officially published. The relationship between the waiting times at each stage of the medical procedure may be used to decrease variability and maximum waiting times.

Los tiempos de espera reales en cirugía. Propuesta de un sistema mejorado para su gestión

Palabras clave:
Sector sanitario
Listas de espera
Gestión de tiempos
Procedimiento quirúrgico no urgente
Colecistectomía
Síndrome del túnel carpiano
Hernia inguinal

RESUMEN

Objetivos: En España, la información oficial sobre tiempos de espera para cirugía está basada en el tiempo desde que se indica la cirugía hasta que se realiza. Nuestro objetivo es estimar el tiempo de espera total considerando también la visita al especialista y las pruebas diagnósticas previas a la cirugía, y proponer un sistema alternativo para gestionar tiempos de espera totales que reduce la variabilidad y los tiempos máximos sin incrementar los de recursos. Se ilustra para tres procedimientos quirúrgicos: colecistectomía, reparación quirúrgica del túnel carpiano y de la hernia inguinal/femoral.
Métodos: Con datos de dos Comunidades Autónomas, se ajusta mediante simulación, una distribución teórica del tiempo de espera total, asumiendo independencia de los tiempos de cada etapa del proceso asistencial. Se muestra un sistema alternativo donde el tiempo de espera para la segunda consulta se establece condicionado al esperado previamente en la primera consulta.
Resultados: Los tiempos de espera totales medios para la colecistectomía, túnel carpiano y hernia inguinal/femoral son 331, 355 y 137 días, siendo los oficiales 83, 68 y 73, respectivamente. Utilizando diferentes correlaciones negativas entre los tiempos de espera de consultas sucesivas se reducirían tanto los tiempos de espera máximos (entre el 2% y el 15%) como la heterogeneidad entre pacientes, sin mayor uso de recursos.
Conclusión: Los tiempos totales de espera son entre dos y cinco veces mayores que los publicados oficialmente. La relación entre tiempos de espera en cada etapa del procedimiento puede utilizarse para reducir la variabilidad y los tiempos máximos de espera.

* Corresponding author.
E-mail addresses: iabasolo@ull.es, iabasolo@gmail.com (I. Abásolo).

0213-9111/$ – see front matter
http://dx.doi.org/10.1016/j.gaceta.2013.10.011

Introduction

Waiting times are the main rationing instrument in those publicly funded health care systems with a zero (or low) monetary price at the delivery point. They are a primary concern from both a social and political point of view.[1] In the Spanish National Health System (SNHS), waiting times are the worst valued aspect of hospital services. More than 60% of citizens consider that this problem has not been solved, or has even worsened.[2]

The official information on waiting times is regulated by the Royal Decree 605/2003.[3] Information on waiting times (except for emergency waiting, and organ transplantations) is published every six months by the Ministry of Health Care, Social Services and Equality (data for the whole country) and by each of the 17 "Autonomous Communities" (hereinafter regions). Despite the standardization of definitions and the regulation of public disclosure of information, the regions provide heterogeneous information in their official web pages, so that comparisons between regions based on this information are not possible. In addition, waiting times are published by type of service (outpatient consultations, diagnostic procedures, and surgery), showing no data about the actual time that patients have to wait from the beginning to the end of their clinical procedures. In particular, for surgery, patients are registered on a waiting list, when the specialist indicates surgery, but in all probability, their route throughout the health care system has started months before, waiting for outpatient consultations and diagnostic tests.

Usefulness of waiting time information has been studied previously. Smith, in a research undertaken into three Scottish hospitals with data at patient level, analysed whether the time on a hospital waiting list for several elective surgical procedures is a valid indicator for the total time that patients have to wait before surgery. Results show that waiting time to be attended in a hospital proves to be half the total waiting time -defined as the time spent from the first related visit to the general practitioner to the date of surgery; the remaining waiting time is due to outpatient consultations and the time waiting between lists.[4] In Canada, Olson and De Gara, also with data at patient level, measured total waiting times for cholecystectomy, breast cancer resection and colorectal cancer resection. Total waiting time was defined as the sum of the time in days from the initial referral by the general practitioner to the surgeon and the time from the first visit to the surgeon to operation (considering time for diagnosis tests if required).[5] In Spain, Bernal also considers that the compartmentalized approach to the waiting list is the most relevant shortcoming in these information systems, since the procedure is not considered as a whole but as independent stages.[6] Peiró and Ridao point out the cross nature of waiting lists in Spain, assuming that patients only wait for a specific procedure. They give an example of patients diagnosed with neoplasm that have to wait for several months, but according to official data, they never wait more than a month.[7,8]

On the basis of the official information on waiting times and lists, this study carries out an analysis of the total waiting times in three elective surgical procedures: cholecystectomy, carpal tunnel release and inguinal/femoral hernia repair. For them, patients have to visit the specialist, and go through diagnostic procedures and surgery, successively. Each procedure has its own independent waiting list in the information system. The results obtained in the current system are compared to those under an improved management system, in which the waiting times in the different stages were not independent but conditioned to the total waiting time elapsed by patients in the previous steps of the procedure.

Methods

Estimation of total waiting time for surgical procedures

In a first stage, total waiting times for several surgical procedures are estimated. Total waiting time for surgery is then defined as the sum of the waiting times for each stage of the whole clinical procedure, i.e. waiting times for the first outpatient visit, for the diagnostic tests, for the second outpatient visit and for surgery. The unavailability of sufficient and homogenous information has restricted and determined the surgical procedures whose total waiting times are estimated: cholecystectomy, carpal tunnel release and hernia repair. Their Diagnosis Related Groups (DRGs) are detailed in Table 1.

Surgical procedures due to inguinal/femoral hernia repair represent approximately 1% of all hospital discharges in Spain, with a mean hospital stay of between 2 and 7 days, depending on the specific DRG, and a case-mix weight of 0.9171 when complications are present. Cholecystectomy involves much longer mean stays, between 8 and 21 days, so these DRGs are among those with the highest mean costs, between 5,500 and 9,900 euros per patient. Carpal tunnel release procedure was carried out on 2,568 cases in 2008 with a 0.5960 case-mix weight.[9] Therefore, these are procedures with a non-negligible social and economic impact.

Regions are supposed to provide information on the empirical distribution of the number of patients on structural waiting lists per time span (up to 90 days, between 91 and 180 days, between 181 and 360 days, and over 360 days) for each stage/waiting time (outpatient consultations, diagnostic and surgical procedures) for several procedures and services. The 'structural waiting time' includes those patients that, at a given time, are waiting to be seen for a first consultation, a first diagnostic/therapeutic procedure, or waiting to be operated, and with a waiting time attributable to the organization and availability of resources.[3] A comparison between various regions based on public information is almost impossible, as only two of them –Galicia and Murcia– disclose enough information on waiting times to analyse these procedures. Therefore, data were taken, from the two abovementioned regional health care systems' web pages on the 31st December, 2009.[10,11] Specifically, data to estimate waiting times for cholecystectomy and inguinal/femoral hernia repair have been taken from the Regional Health Service of Galicia, whilst data for carpal tunnel have been obtained from the Regional Health Service of Murcia (we undertake a simulation exercise that could be applied to other regions or years).

From this information, a sufficiently high number of observations were simulated (250,000) for each waiting time distribution, in order to estimate the best theoretical distribution for each stage of the procedure. Subsequently, the total waiting time for each patient was obtained by adding together the simulated waiting times for each stage of the medical procedure (which are assumed to be independent, as happens in the current situation). We then adjusted a probability distribution to the total waiting time in the three procedures. Finally, these distributions' characteristics were analysed regarding the mean and maximum waiting times, waiting lists, etc. As an example, Figure 1 shows the specific situation for the cholecystectomy procedure.

Software Easyfit 5.3 Professional was used to calculate the theoretical distributions that best represent the empirical data. This allowed us to choose the distribution of the hypothetical waiting list of total waiting time per patient. This software simulates the adjustment for more than 60 distributions, with a wide range of heuristic tests (F, Survival, risk and cumulative risk functions, quartile comparison, and probability) and three goodness-of-fit tests (Kolmogorov-Smirnov, Anderson-Darling and Chi-square tests).